APPENDIX FF - Noise Abatement

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Noise Abatement for Residential Areas

A Method for Determining Reasonableness of Construction

Introduction

Chapter 30, Section 1, of the Project Development Procedures Manual (PDPM) introduces the subjects of reasonableness and feasibility regarding the construction of noise barriers. As pointed out in that Section, environmental studies may result in recommendations that a proposed project consider providing noise abatement to protect specific properties, and it is among the Project Engineer's responsibilities to determine which recommended actions are reasonable and feasible.

That same Section of the PDPM introduces Reasonableness Factors, while Section 2 provides more details regarding the determination of reasonableness, and also introduces six Reasonableness Criteria. To assist the Project Engineer in making a determination regarding reasonableness of constructing noise abatement for residential properties, this subjective scoring method has been developed.

Project Engineers are encouraged to make use of this scoring method as part of their determination of the reasonableness of proposed noise abatement facilities. Evaluation comments regarding the value and effectiveness of this scoring method should be provided to the Headquarters Office of State Noise Abatement and Accessibility Design Standards.

Determination of Reasonableness

Determining the reasonableness of constructing proposed noise abatement facilities should take several factors into consideration. When determining the reasonableness of proposed noise abatement facilities the criteria and procedures that follow should not always be rigidly applied. The consideration of "gray areas" is intended and should always be part of the decision-making process.

There may be instances where noise abatement should be found to be reasonable even though it is found to fall outside some of the established criteria and procedures: e.g., it costs more than the reasonable cost index; absolute traffic noise levels are lower, but increases over existing noise levels are great; changes in noise levels are small, but the absolute levels are high; increase in noise levels since initial development occurred are great, etc.

With the above comments in mind, the six Factors and criteria shown in the following table should be used to make a basic determination of the reasonableness of constructing a noise barrier. Scoring points have been assigned for various values or ranges of values within each criteria to indicate reasonableness. These points will provide a greater positive score for values which are more reasonable, and, in the case of the barrier cost per residence, negative values are shown for very high-cost proposals. When determining an overall score the "weight factor" indicated for each criterion should be applied.

Reasonableness Determination

Factor	Criteria		Points
1. The noise barrier **cost per protected residence** (see Note below) (Weight factor = 2)	Cost per residence is more than	But no more than	
	$0	$15,000	4
	$15,000	$20,000	3
	$20,000	$25,000	2
	$25,000	$30,000	1
	$30,000	$35,000	0
	$35,000	$40,000	- 4
	$40,000		- 8
2. The percentage of the **impacted housing** development that **predated** the initial **highway** construction (Weight factor = 1.5)	Percentage is more than	But no more than	
	80%		4
	60%	80%	3
	40%	60%	2
	20%	40%	1
	0%	20%	0
3. The percentage of the **impacted housing** development which has been **in place** for at least **10 years** (Weight factor = 1)	Percentage is more than	But no more than	
	80%		4
	60%	80%	3
	40%	60%	2
	20%	40%	1
	0%	20%	0
4. The **future "build" noise** levels (i.e., with the proposed project) (Weight factor = 1.5)	Noise Level (dBA), Leq(h) is more than	But no more than	
	75		4
	72	75	3
	69	72	2
	66	69	2
		66	0
5. The **increase in** the proposed project's "build" **noise levels over** the **existing** noise levels (Weight factor = 1.5)	Increase (dBA), Leq(h) is more than	But no more than	
	15		4
	10	15	3
	5	10	2
	3	5	1
		3	0
6. The **increase in** the proposed project's **future** "build" **noise levels** compared to the future "no-build" noise levels (Weight factor = 1.5)	Increase (dBA), Leq(h) is more than	But no more than	
	15		4
	10	15	3
	5	10	2
	3	5	1
		3	0

Note: The scoring for the cost-per-residence factor is based on the cost-effectiveness criterion of $35,000 for the Retrofit Program (See Chapter 30, Section 3, of the PDPM) which is subject to periodic adjustment. When adjustments are made to that factor, the scoring method shown here will be modified by DLPP.

Total Scores and Evaluation

After scores for the six individual factors have been determined, an overall score should be determined from their sum.   The total score should be assessed as follows:

More than 15.5, construction of a noise barrier is reasonable.

12.5 to 15.5, Additional Considerations must be applied.

Less than 12.5, construction of a noise barrier is not reasonable.

Additional Considerations

When appropriate, as determined by the total score of the Reasonableness Factors, the following factors should be considered. These factors are discussed in Chapter 30, Section 1, of the PDPM.

1. Environmental impacts

2. Land use controls

3. Large noise impacts

4. Residents' views

The format on the following page may be used for evaluating the reasonableness criteria, as well as documenting the decision-making process.

NOISE BARRIER DECISION-MAKING

(Project Identification and Description) _____

_____

_____

Feasibility

	Yes	No
Can a 5 dBA noise reduction be achieved?	_____	_____
Therefore, a noise barrier is feasible.	_____	_____

Reasonableness

REASONABLENESS FACTORS

	Points	X	Weight Factor	=	Score
1. Barrier cost per residence	_____	X	2	=	_____
2. Development vs. highway timing	_____	X	1.5	=	_____
3. Development existence	_____	X	1	=	_____
4. Future "build" noise level	_____	X	1.5	=	_____
5. "Build" noise level versus existing noise level	_____	X	1.5	=	_____
6. "Build" noise level versus no-build noise level	_____	X	1.5	=	_____

Total Score = _____

Total Score: More than 15.5, construction of noise barrier is reasonable.
12.5 to 15.5, Additional Considerations must be applied.
Less than 12.5, construction of noise barrier is not reasonable.

DISCUSSION OF ADDITIONAL CONSIDERATIONS (if required)

Construction of noise barrier is reasonable?   Yes _____   No _____

Decision

Should noise barrier be constructed?   Yes _____   No _____
REASONS FOR DECISION: (Be specific)

Project Engineer (Signature)_____

Date _____